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Descriptions of New Species of
Gastropods from Clipperton Island

By

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A collection of molluscan shells from Clipperton Island in the eastern Pacific (Latitude $10^{\circ} 17' 00''$ N., Longitude $109^{\circ} 13' 00''$ W.) assembled by the junior author in 1958 (see Allison, 1959) contained a number of species of gastropods, many of which were recorded in an earlier paper by the present authors (Hertlein and Allison, 1966). Species of gastropods not included or cited with provisional identification in that paper have received additional study and, as they apparently are undescribed new forms, descriptions of them are furnished in the present paper.

Acknowledgments are due several individuals who aided us in the present study. Dr. Alison Kay, Department of Science, University of Hawaii, compared specimens of the new *Colubraria* with others in the Bernice P. Bishop Museum in Honolulu, Hawaii. Dr. and Mrs. G Dallas Hanna, California Academy of Sciences, aided in the measurement of specimens and in the retouching and arrangement of the illustrations. Mr. Allyn G. Smith, of the same institution, aided with the identifications and contributed constructive criticism of the manuscript; Mr. Maurice Giles, California Academy of Sciences, prepared the photographs used to illustrate two of the species. The line drawings reproduced as text figures were made by Mrs. May Blos, scientific illustrator, University of California. An exchange of specimens with Dr. William K. Emerson and Mr. William Old, Jr., American Museum of Natural History, made available specimens of *Colubraria* for comparative study.

The holotype specimens of the new species and all other specimens illustrated in this paper are in the University of California Museum of Paleontology, Invertebrate Type Collection, Berkeley, California. Paratypes, where available, are in the California Academy of Sciences, Department of Geology, Type Collection.

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DESCRIPTION OF SPECIES

Cyclostremiscus solitarius Hertlein and Allison, new species.

(Figure 1.)

Cyclostrema cingulifera A. Adams, HERTLEIN AND ALLISON, *The Veliger*, vol. 9, no. 2, p. 139, 1966.Not *Cyclostrema cingulifera* A. ADAMS, *Proc. Zool. Soc. London* for 1850, p. 43, issued November 12, 1850. "Hab. Dumaguete, island of Zebu, 4 fathoms; H. C. (Mus. Cuming)."

DESCRIPTION. Shell very small, discoid, nuclear whorl followed by 2 regularly expanding rounded whorls; spire deeply depressed, umbilicus broadly funnel-shaped; last whorl with a sharp, serrate, spiral keel on the periphery, two similar ones, one a short distance above, the other below the central keel, also on each side above the margin of the umbilicus is a spiral row of fine nodes and at the margin of the umbilicus there is a trace of a very fine spiral threadlet; the surface between the keels is sculptured with very fine spiral striae, and on the early portion of the first whorl there are faint transverse markings between the basal and the succeeding keel; peristome circular, the margin fairly thick, slightly flaring; operculum circular, the exterior with faint traces of concentric lines. Maximum diameter .74 mm., minimum diameter .57 mm., maximum height of body whorl .38 mm.

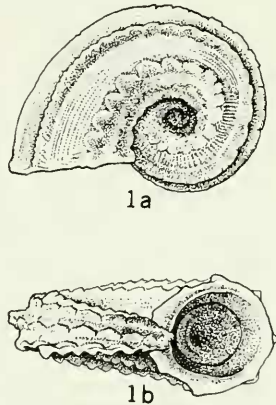


FIGURE 1. *Cyclostremiscus solitarius* Hertlein and Allison, new species. Holotype no. 37121 (UC), from Clipperton Island. 1a, basal view; 1b, apertural view; maximum diameter 0.74 mm.

Holotype no. 37121, University of California Museum of Paleontology, Invertebrate Type Collection, from Locality B-4241, outer portion of intertidal bench with prominent *Pocillopora*, brown algae, and slight amounts of coralline algae, Clipperton Island.

REMARKS. The generic assignment of this new species may be open to question, but it bears a general resemblance to some species of *Cyclostremiscus*. The general shape and character of coiling resembles that of the form described as

Cyclostremella venezuelana Weisbord (1962, p. 136, pl. 9, figs. 7, 8; pl. 12, figs. 20–22), from strata of late Cenozoic age. However, according to Moore (1966, p. 480) the Venezuelan species is not referable to the genus *Cyclostremella*.

The illustration given by Moore of *Cyclostrema humilis* Bush, the type species of *Cyclostremella*, reveals the presence of a slight depression below the suture and the operculum is somewhat elongated and paucispiral. The whorls of the new species from Clipperton Island are rather evenly rounded and the operculum is circular in outline.

***Amphithalamus trosti* Hertlein and Strong.**

(Figure 2.)

Amphithalamus trosti HERTLEIN AND STRONG, Allan Hancock Pac. Exped., vol. 2, no. 12, p. 228, pl. 21, fig. 2, August 21, 1939. "Dredged in from 3 to 9 fms. in Bahia Honda, Panama."

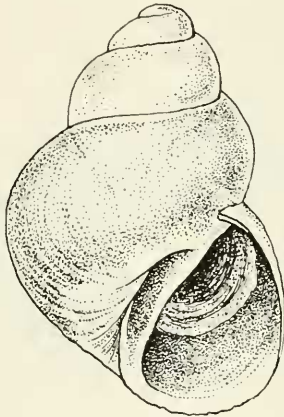


FIGURE 2. *Amphithalamus trosti* Hertlein and Strong. Hypotype no. 37122 (UC), from Clipperton Island. Length 1.18 mm.

One minute, glassy shell found in shell washings closely resembles *Amphithalamus trosti*. It differs from the type specimen of that species in that the whorls are slightly more rounded and impressed at the suture. Only a faint trace of a peripheral threadlet is present but this feature apparently varies somewhat in a series of specimens from the type locality of *A. trosti*. The similarity of the present specimen to the Panamanian shell is so great that we assign it to that species.

***Heliacus infundibuliformis strigatus* (Hanley).**

(Figure 3.)

Solarium infundibuliforme variety (?) *strigata* HANLEY, Thes. Conch., vol. 3, *Solarium*, p. 243, pl. 254, (*Solarium*, pl. 5), fig. 94, 1863. Expl. to pl. 5, "Sandwich Isles (var. *Chemnitzii*)."

Not *Solarium chemnitzii* KIENER, Spéc. Gen. et Icon. Coq. Viv., Fam. Turbinacées, *Solarium*, p. 12, pl. 4, fig. 8, 1838-1839. "Habite la mer des Indes l'île Bourbon et la mer de la Chine." According to Tryon, 1887 this = *Trochus infundibuliformis* Gmelin, LINNAEUS Syst. Nat., Tom. 1, Pars. 6, p. 3575, 1791. "Habitat rarissimus. . ." (Ref. to Chemnitz, Bd. 5, pl. 173, figs. 1706, 1707, 1781. "Ihr Vaterland ist mir unbekannt.")

Torinia infundibuliforme Gmelin var. *strigata* Hanley, TRYON, Man. Conch., vol. 9, p. 20, pl. 6, fig. 99, 1887. (No locality cited.)

Helicacis infundibulum strigata Hanley, HERTLEIN AND ALLISON, The Veliger, vol. 9, no. 2, p. 140, 1966. Clipperton Island.

A specimen from Locality B-4237 (A-588-1), beach on Clipperton Island, 9.5 mm. in maximum diameter and 5.5 mm. high, appears to be referable to the form described by Hanley as "*Solarium infundibuliforme* variety (?) *strigata*." No specific locality was assigned to this variety but localities cited for *S. infundibuliforme* were, "Philippines; Lord Hood's Island; Sandwich Isles (var. *Chemnitzii*)."

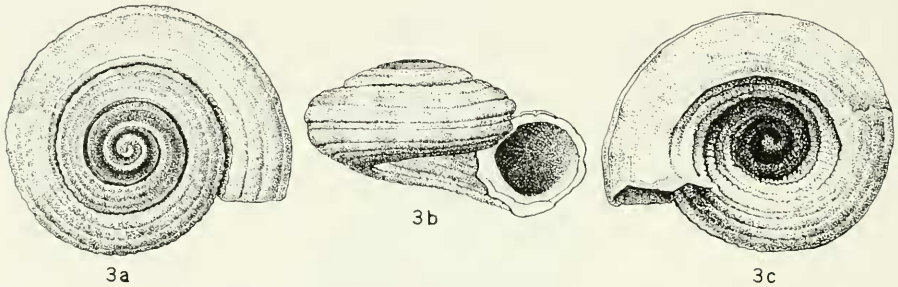


FIGURE 3. *Helicacis infundibuliformis strigatus* (Hanley). Hypotype no. 37123 (UC), from beach on Clipperton Island. 3a, apical view; 3b, apertural view; 3c, basal view; maximum diameter 9.5 mm.

Hanley's original description follows: "In the variety (?) *strigata* (f. 94) there are 3 approximate narrower, and 3 broader belts under the lower peripheral one: the threads, if any, are most minute: there are 4 or 5 ridges on the umbilical wall." The coloration was mentioned by Tryon as, "Periphery and the rib below it ornamented with white and smoky-brown spots."

The present specimen from Clipperton Island agrees so well with the variety described by Hanley that we refer it to that form.

The form described as *Solarium chemnitzii* by Kiener was reported from Hawaii by Hanley. Later, Tryon relegated Kiener's species to the synonymy of the earlier "*Trochus*" *infundibuliformis* Gmelin and considered Hanley's "*Solarium infundibuliforme* var. (?) *strigata*" to be a valid variety. Tryon also suggested the possibility that Gmelin's species might be identical with the earlier *Turbo crenellus* Linnaeus, 1767, and later Bayer (1944) also followed this assignment. Neither *H. infundibuliformis* nor *H. i. strigatus* was reported from Hawaii

in recent papers by Bryan (1958, suppl. p. 5) nor by Robertson (1967, p. 247). However, Dr. Alison Kay informed us (written communication, 5 November 1967) that one shell referable to *H. infundibuliformis* was dredged (by the *Pele*) off Oahu in 40 fathoms.

***Odostomia (Chrysallida) limbaughi* Hertlein and Allison, new species.**

(Figure 4.)

DESCRIPTION. Shell minute, ovately conic, vitreous. Nuclear whorl about half immersed at a right angle in the succeeding post-nuclear whorl, and bearing 5 spiral lirations. First and second post-nuclear whorls straight sided, slightly shouldered at the summit and sculptured with a row of nodules of which about 18 are present on the penultimate whorl. Spiral sculpture consists of flattened ribs which are separated by incised spiral grooves, the first post-nuclear whorl with 4, the second 6, the penultimate with 8 and the body whorl with 8 of which the last 4 are narrower. The periphery and base of the last whorl is well rounded. The aperture is large, broadly ovate, and angulated posteriorly; outer lip thin, the base slightly reflected. Length 1.47 mm., maximum diameter .72 mm.

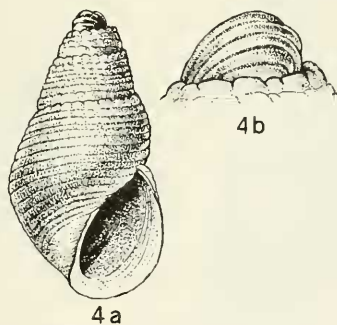


FIGURE 4. *Odostomia (Chrysallida) limbaughi* Hertlein and Allison, new species. Holotype no. 37124 (UC), from Clipperton Island. 4a, apertural view; length 1.47 mm.; 4b, view of nuclear whorl, greatly enlarged.

HOLOTYPE no. 37124, University of California Museum of Paleontology, Invertebrate Type Collection, from Locality B-4241, outer portion of intertidal bench with prominent *Pocillopora*, brown algae, and slight coralline algae, Clipperton Island. E. C. Allison, collector.

This new species is quite different from any species known to us. It bears a general resemblance to *Odostomia (Chrysallida) sapia* Dall and Bartsch (1909, p. 167, pl. 18, figs. 3, 3a) described from San Diego, California. The new species differs from *O. (C.) sapia* in that the two post-nuclear whorls are straight sided rather than rounded and these are sculptured with more numerous spiral ribs.

This species is named for Conrad Limbaugh, leader of the Expedition to Clipperton Island during which the type specimen was collected.

Turbonilla (Pyrgisculus) clippertonensis Hertlein and Allison, new species.

(Figure 5.)

DESCRIPTION. Shell elongated, nuclear whorls about one and a half, smooth, the nucleus about one-half immersed, the axis at almost a right angle to that of the succeeding whorls; post-nuclear whorls 4, decidedly rounded and constricted at the sutures, sculpture consisting of about 16 slightly curved axial riblets on the first whorl and 18 or 20 on the following whorls; axial sculpture crossed by spiral threads of nearly the same strength as the axials, a fine node is formed at the intersection of the axial and spiral sculpture; the intercostal spaces each with a slightly spirally elongated pit, forming spiral series; base of last whorl sculptured with fine spiral lines; aperture ovate, the anterior portion very broadly rounded. Length 1.1 mm., maximum diameter .43 mm.

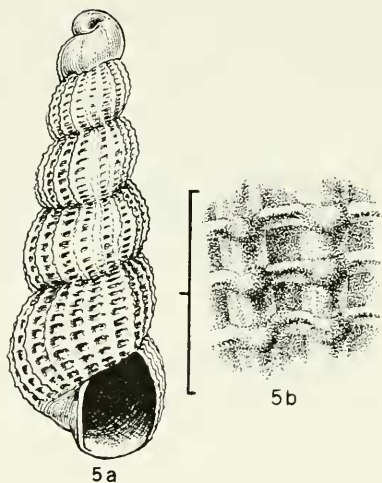


FIGURE 5. *Turbonilla (Pyrgisculus) clippertonensis* Hertlein and Allison, new species. Holotype no. 37125 (UC), from Clipperton Island. 5a, apertural view; length 1.1 mm.; 5b, detail of sculpture greatly enlarged.

HOLOTYPE. University of California Museum of Paleontology, Invertebrate Type Collection, no. 37125, from Locality B-4241, Clipperton Island.

REMARKS. This new species is provisionally placed in the subgenus *Pyrgisculus* Monterosato because of its general similarity to the species described as *Dunkeria paucilirata* Carpenter, a species placed in *Pyrgisculus* by later authors. The general shape of the rounded whorls, strongly constricted at the suture, and the strong axial riblets, are similar to those features on that species.

The shell of the new species differs decidedly from the species described by Carpenter in the more closely spaced axial riblets, in that the spiral threads are nearly as strong as the axials and in that pits are present in the intercostal spaces.

The strong spiral sculpture on the present species is similar to that of some species of *Pyrgiscus* Philippi.

Dunkeria paucilirata Carpenter (1856, p. 534) was described from a single specimen from "Mazatlan; 1 sp. off *Chama*," Mexico. It was illustrated later under the name of *Turbonilla (Pyrgisculus) paucilirata* (Carpenter) by Dall and Bartsch (1909, p. 129, pl. 12, fig. 10) and more recently as *Chemnitzia (Dunkeria) paucilirata* (Carpenter) by Brann (1966, p. 72, pl. 47, fig. 536). The spiral sculpture of that species is much finer than the axial and no pits are visible in the intercostal spaces shown in the illustrations.

***Colubraria ochsneri* Hertlein and Allison, new species.**

(Figures 6, 7, 8.)

Colubraria species, HERTLEIN AND ALLISON, *The Veliger*, vol. 9, no. 2, p. 140, 1966.

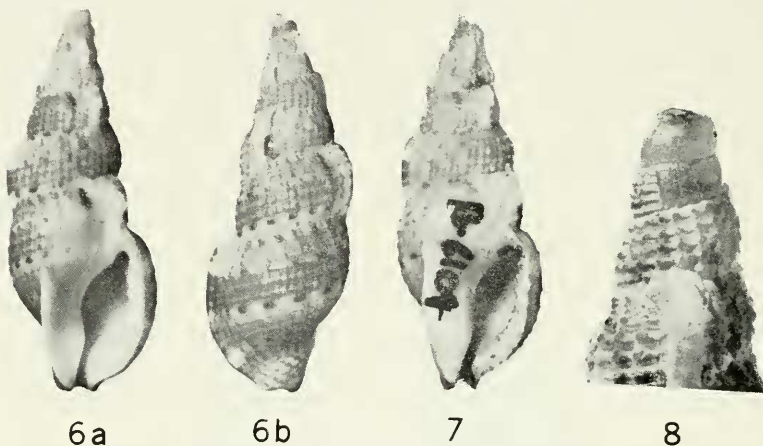
DESCRIPTION. Shell elongately turreted, of medium thickness, about six and a half gently convex whorls, each with a prominent varix, the varices on every other whorl are rudely aligned in apertural view; protoconch and nuclear whorls lacking on holotype; about 12 well developed, closely and evenly spaced radial threads appear on the fourth whorl and these increase to about 28 or 30 on the last whorl, these are crossed by concentric threads, about five on the fourth whorl and seven or eight on the penultimate whorl, a double row is present anterior to the suture on the last whorl and these are followed by about 20 or more, evenly spaced but somewhat finer toward the base; a node is present where the radial and concentric threads cross, the whole forming granular, reticulate sculpture; the interspaces between the radials and between the concentric threads are ornamented with a few minute concentric striae, about six on the body whorl, separated by narrower grooves parallel to the major threads; aperture elongately oval, posteriorly ending in a narrow notch in the parietal callus; outer lip with a varix, the inner margin with fine, paired striae, the pillar excavated in the middle, the inner lip formed by a broad, smooth, white callus which at base projects outward as a narrow plate; the anterior canal is rather narrow, slightly recurved; color of shell light brown with a darker medial concentric band, above and below which on the body whorl there is a row of small brown spots, the varices are light in color but with brown spots sometimes corresponding to the brown bands. Dimensions of the holotype: length (apex lacking), 29.8 mm., maximum diameter, 11.4 mm.

The protoconch of a paratype, 23.2 mm. in length, is slightly convex, brown, followed by 2 smooth, glassy whorls, the latter one developing very fine longitudinal threadlets which are crossed by concentric threadlets forming decussate sculpture, with very fine beads at their intersections. In general appearance, these features resemble those of *Colubraria jordani* Strong illustrated by Campbell (1961, fig. 1).

Holotype, no. 37126 and paratypes 37127, 37129, University of California

Museum of Paleontology, Invertebrate Type Collection, from Locality B-4237 (A-588-1, Allison field station number), beach at Clipperton Island. A paratype, no. 37128 from Locality B-6101 (A-588-5), approximately 100 meters off edge of reef flat and 30 meters inshore from outer edge of submerged terrace (depth, 10–12 meters) opposite United States Naval Observatory marker on north side of island.

Paratypes also are in the California Academy of Sciences, Department of Geology, Type Collection.



FIGURES 6, 7, 8. *Colubraria ochsneri* Hertlein and Allison, new species. From Clipperton Island. 6. Holotype no. 37126 (UC), length (apex lacking) 29.8 mm.; 6a, apertural view; 6b, dorsal view. 7, paratype no. 37127 (UC), length (apex lacking) 27.3 mm., apertural view. 8, paratype no. 37129 (UC), view of apical whorls approximately $\times 19$.

REMARKS. About 25 specimens of this new species, 12 to 30.5 mm. long (apex lacking on most specimens) have been available for study. There is some variation in the degree of coarseness of the granular sculpture on various specimens but this may be the result of erosion.

The general form and sculpture of this new species is similar to that of *Triton nitidulus* Sowerby (1833, p. 71; Reeve, 1844, *Triton*, species 70, pl. 17, fig. 70), originally described from "Hab. ad Insulam Annaa," "Found on the reefs. - G.B.S." The new species differs from *Colubraria nitidula* in the smaller size, less elongate form, shorter anterior canal and proportionately wider aperture.

Colubraria ochsneri, new species, appears to be distinct from any species of *Colubraria* described from the eastern Pacific (see Campbell, 1961). The exterior of the shell of the new species bears finer sculpture than the "narrow form" of *C. lucasensis* Strong and Hertlein from the Galápagos illustrated by Emerson and D'Attilio (1966, p. 176, pl. 26, figs. 1–4) and the anterior canal is slightly shorter. A difference in detail of sculpture is that on *C. ochsneri*, new species,

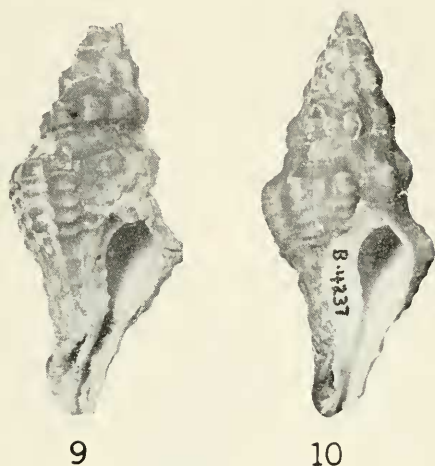
the interspaces between the node-bearing concentric spirals are sculptured with fine spiral striae of nearly equal size whereas on *C. lucasensis* the corresponding spiral striae are somewhat coarser and among them one thread is coarser than the others.

This species is named for Washington Henry Ochsner who collected marine shells on Clipperton Island in 1905 during the Expedition of the California Academy of Sciences to the Galápagos Islands.

***Latirus clippertonensis* Hertlein and Allison, new species.**

(Figures 9, 10.)

Latirus aff. *L. socorroensis* Hertlein and Strong, HERTLEIN AND ALLISON, *The Veliger*, vol. 9, no. 2, p. 140, 1966.



FIGURES 9 and 10. *Latirus clippertonensis* Hertlein and Allison, new species. 9, holotype no. 37130 (UC), from Clipperton Island. Length (apex lacking) 50.5 mm.; 10, paratype no. 37131 (UC), length 42.8 mm.

DESCRIPTION. Shell elongately turreted, yellowish-white covered with a golden-orange periostracum; $5\frac{1}{2}$ whorls present, the apex lacking; whorls regularly increasing in size, concave above a subangulate shoulder, below this gently convex, the last whorl nearly straight sided and sloping steeply anteriorly; axial sculpture consists of 9 rounded ribs on the penultimate whorl and 10 on the last whorl, these fade out toward the base on the last whorl; spiral sculpture on the early whorls consists of 2 raised cords, 3 on the penultimate whorl and 6 on the last whorl, followed by 3 or 4 widely spaced ones on the canal; the spiral cords are faint in the interspaces but where they cross the radial ribs they form elongated nodes, very prominent on the shoulder; aperture ovately elongate, inner margin of outer lip with fine spiral ridges, a calcareous node on the parietal wall near the posterior end of the aperture, columella with 3 plaits near the

lower end, canal narrow; siphonal fasciole well developed. Dimensions of holotype: length (apex lacking) 50.5 mm., maximum diameter, 23.5 mm.

Holotype no. 37130, University of California Museum of Paleontology, Invertebrate Type Collection, from Locality B-6120 (A-588-25, Allison field station number), off edge of submerged terrace at a depth of 40–45 meters, on the north side of Clipperton Island opposite the west end of main washout area. A paratype no. 37131 and two additional imperfect specimens, from Locality B-4237 (A-588-1, Allison field station number), shells washed onto the beach, Clipperton Island.

REMARKS. This form, as is true of a number of species and subspecies described from Clipperton Island, although resembling its nearest congener, develops shell characters differing sufficiently to separate it from the typical form. The present specimens are quite similar to some forms of *Latirus socorroensis* Hertlein and Strong (1951, p. 76, pl. 26, fig. 8), from Clarion and Socorro islands, Revillagigedo islands, Mexico, but they differ especially in their more elongate outline, longer and wider anterior canal and coarser spiral ribbing which is more sharply nodulose posteriorly.

Succinea atollica Hertlein and Allison, new species.

(Figure 11.)

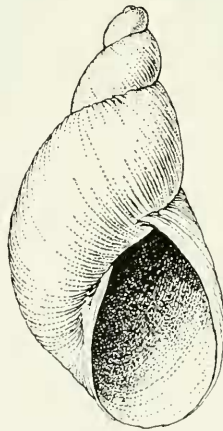


FIGURE 11. *Succinea atollica* Hertlein and Allison, new species. Holotype no. 37132 (UC), from Clipperton Island. Length 11.1 mm.

DESCRIPTION. Shell elongately ovate, thin, translucent, upper whorls light amber colored, the last whorl grayish-yellow with irregularly spaced brown lines paralleling the lines of growth; spire acute, about one-half or slightly less the total length of the shell; whorls $4\frac{1}{2}$, broadly convex, sculptured only with lines of growth and on the last whorl there are shallow longitudinal depressions parallel

to the lines of growth; suture rather deeply incised; columella with well developed callus which is appressed and decidedly reflected in the middle but becoming thinner and gradually disappearing before reaching the base of the inner lip; aperture elongately ovate about $\frac{1}{2}$ (or slightly more) the length of the shell, the greatest expansion before reaching the anterior margin. Length of shell 11.1 mm., maximum diameter 5.76 mm., length of aperture 6.47 mm., width of aperture 3.72 mm.

Holotype no. 37132, and paratypes nos. 37133, 37134, 37135, University of California Museum of Paleontology, Invertebrate Type Collection, from Locality B-4241 Clipperton Island. Paratypes also in the California Academy of Sciences, Department of Geology, Type Collection.

REMARKS. About 30 well-preserved specimens from Locality B-4241, also many weathered specimens from Locality 4237, beach, Clipperton Island.

The new species described here bears a close resemblance to the form described as *Succinea lutcola* var. *subtilis* von Martens (1898, p. 331, pl. 19, fig. 2) from Vera Cruz, Mexico. It differs from the east Mexican form in the slightly more slender outline, in the narrower body whorl, and in that the aperture is about one-half rather than five-ninths the length of the shell.

Opeas opanum (Pfeiffer).

(Figure 12.)

Bulimus opanus PFEIFFER, Proc. Zool. Soc. London for 1846, p. 34, issued May, 1846.

"From the island of Oparu; found in earth at roots of Plants (H. Cuming, Esq.)."

Opeas opanum (Pfeiffer), PILSBRY, Man. Conch., ser. 2, vol. 18, p. 183, pl. 22, figs. 1, 2, 3, 12; pl. 24, fig. 39, 1906. "Hawaii, Marquesas, Paumotu, Society." BARTSCH AND REIDER, Smithsonian. Miscell. Coll., vol. 98, no. 10 (Pub. 3535), p. 16, 1939. Clipperton Island. HERTLEIN AND ALLISON, The Veliger, vol. 9, no. 2, p. 140, 1966. Clipperton Island.

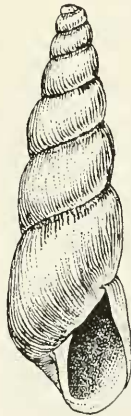


FIGURE 12. *Opeas opanum* (Pfeiffer). Hypotype no. 37136 (UC), from Clipperton Island. Length 9.3 mm.

Many specimens of *Opeas opanum* were taken on Clipperton Island, where they were living commonly in the protection of rock and plant debris. This species is rather widely distributed in the Polynesian region.

?*Omalogyra* species.

(Figure 13.)

A few minute, flatly coiled, translucent brown shells of gastropods, some bearing microscopic threadlets on the periphery, are present in shell washings from Clipperton Island. These were taken on "the outer portion of the intertidal bench with prominent *Pocillopora*, brown algae, and slight coralline algae."

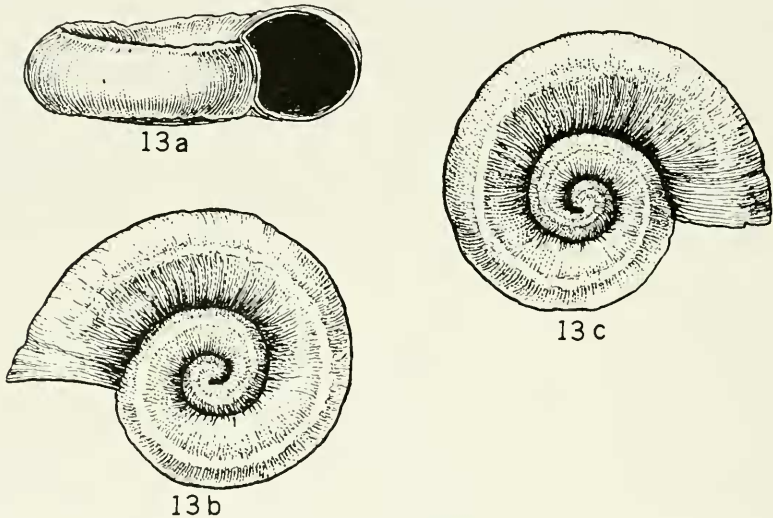


FIGURE 13. ?*Omalogyra* species. Hypotype no. 37137 (UC), from Clipperton Island. Maximum diameter 0.425 mm., height 0.18 mm. 13a, apertural view; 13b, basal view; 13c, apical view.

These specimens were examined by Allyn G. Smith who pointed out their similarity in general appearance to some families of land snails such as the Endodontidae. However, in view of the locality, the lack of soft parts and the operculum, he agreed that these shells may be referred questionably to ?*Omalogyra* Jeffreys, a genus of minute marine snails.

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